

WHAT IS CLAIMED IS:

1. An ink-jet head comprising:
a passage unit including a plurality of nozzles for
5 ejecting ink, a plurality of pressure chambers each
connected to each of the nozzles, a common ink chamber for
supplying ink to the pressure chambers, and inlet ports for
introducing ink into the common ink chamber; and
a branching passage unit including an ink
10 introduction port into which ink is introduced, ink outlet
ports formed to correspond to the inlet ports and leading
out ink to the inlet ports, an ink branching passage for
branching ink from the ink introduction port to the ink
outlet ports, and an ink filter formed in the ink branching
15 passage.
2. The ink-jet head according to claim 1, wherein
the branching passage unit is formed by laminating a
plurality of plates, and the filter is formed in any one of
the plurality of plates.
- 20 3. The ink-jet head according to claim 2, wherein
the filter is formed by excimer laser machining.
4. The ink-jet head according to claim 2, wherein
the plurality of plates include a metal plate and a
resin plate, and the plate in which the filter is formed is
25 a resin plate.

5. The ink-jet head according to claim 1, wherein the branching passage unit further includes an ink reservoir for restoring ink, and the filter is disposed between the ink reservoir and the ink outlet ports.

5 6. The ink-jet head according to claim 1, wherein the branching passage unit is formed by laminating a plurality of plates, and

the filter is formed in a plate including the ink outlet ports among the plurality of plates and in a region
10 corresponding to the ink outlet ports.

7. The ink-jet head according to claim 1, wherein the branching passage unit further includes an ink reservoir for restoring ink, and

the filter is disposed between the ink introduction
15 port and the ink reservoir.

8. The ink-jet head according to claim 1, wherein the branching passage unit further includes an ink reservoir for restoring ink,

the branching passage unit has a first plate in which
20 the ink introduction port is formed, a second plate in which the ink reservoir is formed, and a third plate arranged between the first plate and the second plate, and the filter is formed in the third plate.

9. The ink-jet head according to claim 8, wherein
25 the filter is formed in the third plate and in a

substantial center of the ink reservoir.

10. A filter assembly used for an ink-jet head, the ink-jet head comprising a passage unit including a plurality of nozzles for ejecting ink, a plurality of pressure chambers each connected to each of the nozzles, a common ink chamber for supplying ink to the pressure chambers, and inlet ports for introducing ink into the common ink chamber; and a plurality of filter supporting members arranged on a surface of the passage unit so that each filter supporting member covers the inlet ports, the filter assembly comprising:

the plurality of filter supporting members disposed to neighbor each other;

interconnecting portions for connecting the neighboring filter supporting members with each other, bending strength on a boundary between the interconnecting portion and the filter supporting member being smaller than bending strength of the filter supporting member; and

a filter formed in each of the plurality of filter supporting members.

11. The filter assembly according to claim 10, wherein the plurality of filter supporting members are disposed to neighbor each other at a distance shorter than a distance at which they are to be arranged on a surface of the passage unit.

12. The filter assembly according to claim 10,
wherein the filter is formed by excimer laser machining.

13. The filter assembly according to claim 10,
wherein each of the filter supporting members includes a
5 metal plate and a resin plate, and the plate in which the
filter is formed is a resin plate.

14. The filter assembly according to claim 10,
wherein the plurality of filter supporting members are
formed in such a shape as to be arranged alternately on a
10 surface of the passage unit not to overlap actuators for
changing volumes of the pressure chambers.

15. The filter assembly according to claim 10,
wherein each of the interconnecting portions has an
elongated shape in a direction of connecting the filter
15 supporting members each other.

16. The filter assembly according to claim 10,
wherein the filter supporting members and the
interconnecting portions are formed in one piece.

17. The filter assembly according to claim 10,
20 further comprising:

a frame portion surrounding the plurality of filter
supporting members; and

peripheral connecting portions for connecting the
frame portion with the filter supporting members adjacent
25 to the frame portion, bending strength on a boundary

between the peripheral connecting portion and the filter supporting member being smaller than bending strength of the filter supporting member.

18. The filter assembly according to claim 17,
5 wherein the filter supporting members, the interconnecting portions, the frame portion, and the peripheral connecting portions are formed in one piece.

19. The filter assembly according to claim 10,
wherein, within a branching passage unit including an ink
10 reservoir for storing ink, the filter supporting member constitutes a member intervening between the ink reservoir and the ink outlet ports for leading out ink to the inlet ports.

20. A method for manufacturing an ink-jet head,
15 comprising steps of:

forming a passage unit including a plurality of
nozzles for ejecting ink, a plurality of pressure chambers
each connected to each of the nozzles, a common ink chamber
for supplying ink to the pressure chambers, and inlet ports
20 for introducing ink into the common ink chamber;

manufacturing a filter assembly comprising a
plurality of filter supporting members disposed to neighbor
each other, interconnecting portions for connecting the
neighboring filter supporting members, and a filter formed
25 in each of the plurality of filter supporting members,

bending strength on a boundary between the interconnecting portion and the filter supporting member being smaller than bending strength of the filter supporting member;

5 separating the plurality of filter supporting members from each other by bending the interconnecting portions on the boundaries between the interconnecting portions and the filter supporting members; and

10 arranging the plurality of filter supporting members on a surface of the passage unit such that the filter may face each of the inlet ports.

21. The method for manufacturing an ink-jet head according to claim 20, wherein, in the step of manufacturing the filter assembly, the plurality of filter supporting members are disposed to neighbor each other at a distance shorter than a distance at which they are to be arranged on the surface of the passage unit in the step of

15 arranging the plurality of filter supporting members.

22. The method for manufacturing an ink-jet head according to claim 20, wherein, in the step of manufacturing the filter assembly, the filter is formed by excimer laser machining.

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23. The method for manufacturing an ink-jet head according to claim 20, wherein, in the step of manufacturing the filter assembly, each of the filter supporting members includes a metal plate and a resin plate,

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and the filter is formed in the resin plate of the filter supporting member.

24. The method for manufacturing an ink-jet head according to claim 20, further comprising a step of
5 alternately arranging actuators for changing volumes of the pressure chambers on a surface of the passage unit so as not to overlap the plurality of filter supporting members.

25. The method for manufacturing an ink-jet head according to claim 20, wherein, in the step of
10 manufacturing the filter assembly, each of the interconnecting portions is formed in an elongated shape in a direction of connecting the filter supporting members each other.

26. The method for manufacturing an ink-jet head
15 according to claim 20, wherein, in the step of manufacturing the filter assembly, the filter supporting members and the interconnecting portions are formed in one piece.

27. The method for manufacturing an ink-jet head
20 according to claim 20,

in the step of manufacturing the filter assembly,
manufacturing a filter assembly comprising the plurality of filter supporting members, the interconnecting portions, the filters, a frame portion surrounding the
25 plurality of filter supporting members, and peripheral

connecting portions for connecting the frame portion with
the filter supporting members adjacent to the frame portion,
bending strength on a boundary between the peripheral
connecting portion and the filter supporting member being
5 smaller than bending strength of the filter supporting
member, and

the method further comprising a step of:

separating the frame portion and the filter
supporting members adjacent to the frame portion from each
10 other by bending the peripheral connecting portions on the
boundaries between the peripheral connecting portions and
the filter supporting members.

28. The method for manufacturing an ink-jet head
according to claim 27, wherein, in the step of
15 manufacturing the filter assembly, the filter supporting
members, the interconnecting portions, the frame portion,
and the peripheral connecting portions are formed in one
piece.